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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,506	12/04/2003	Eric Lemaire	612.43268X00	7171

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EXAMINER	
LEUNG, RICHARD L	
ART UNIT	**PAPER NUMBER**
3744	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,506	LEMAIRE ET AL.	
	Examiner	Art Unit	
	Richard L. Leung	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12-04-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 04 December 2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the entries listed as foreign patent documents fail to identify the country or patent office which issued the patents or published the applications, as required by 37 CFR 1.98(b)(4). It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A means for separating the gas phase from the liquid

phase obtained in stage (g) is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). While it is noted by the Examiner that page 9, lines 20-22 of the written disclosure recites that the gas phase obtained in stage g) can be fed into the distillation column separately from the liquid phase obtained in stage g), there is inadequate disclosure explaining how the gas phase is actually removed from the liquid phase such that the gas phase can be fed separately into the distillation column. As depicted in the Figures and described on pages 16-17, the effluent stream 21 is expanded by expander 50 and heated by exchanger 52 to create a mixed effluent comprising a liquid phase and a gas phase, the gas phase subsequently being fed to the distillation column 54 by line 53. However, it is not sufficiently described how the gas phase and the liquid phases produced by the heating step are separated, and it is not disclosed what happens to the liquid phase. As best understood from Figure 3, the entire mixed effluent leaving heat exchanger 52 is fed to the column 54 through line 53. Therefore, minus any mention of steps or structural features that would allow the gas and liquid phases to be fed to the distillation column separately, the invention as defined by claim 7 is not considered enabled by the specification. This rejection may be overcome by explicitly demonstrating where proper support for this claim may be found in the disclosure.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 recites the limitation, "distilling in a distillation column at least one of the liquid effluents obtained in stages c), d) and e)..." Similarly, claim 6 recites the limitation, "heating at least one of the liquid effluents obtained in stages c), d) and e)..." Claim 1, from which claims 5 and 6 depend, does not recite any stages d) and e). Therefore it is unclear what stages d) and e) refer to, rendering claims 5 and 6 indefinite. For the purpose of advancing prosecution in this Office action, claim 5 will be treated as being dependent from claim 4. However, appropriate correction is required to overcome this rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0104438 A1 (Cadours et al.) in view of US 2002/0062735 A1 (Lecomte et al.). Cadours et al. disclose a method for treating natural gas containing hydrocarbons and hydrogen sulfide (H2S) comprising contacting the gas with a first physical solvent in a primary absorption section 2 so as to obtain a liquid effluent through line 7 and a treated gas depleted in hydrogen sulfide through line 3. See paragraph [0044]. The liquid effluent is expanded in a flash drum 10 to form a hydrocarbon depleted liquid effluent

and a gaseous effluent containing hydrocarbons which is subsequently contacted with a second physical solvent in column 12 so as to obtain a liquid effluent containing hydrogen sulfide discharged through line 14, and a fuel containing hydrocarbons through line 13. See paragraph [0048]. The liquid effluent from line 14 is then heated in heat exchanger 30 and fed to a distillation column 18 so as to obtain a regenerated solvent at the bottom of the column 18. See paragraph [0050]. Cadours et al. further disclose that the first physical solvent is an aqueous solvent having a water content below 50% by weight. See paragraph [0039]. Cadours et al. fail to disclose that the natural gas is first cooled so as to condense water and to recover a gaseous effluent, which is then distilled to obtain a liquid phase and a gas phase, said gas phase being cooled so as to obtain a condensate and a gaseous effluent depleted in hydrogen sulfide and in water. Cadours et al. further fail to disclose that the gaseous effluent depleted in hydrogen sulfide and in water is maintained at a temperature ranging from -100 degrees C to 30 degrees C and at a pressure above 1 MPa abs. Lecomte et al. teach a method for pretreating acidic natural gas containing hydrogen sulfide comprising the steps of cooling the natural gas in heat exchanger 102 so as to condense water and to recover a gaseous effluent. See paragraph [0054]. The gaseous effluent is distilled in column 14 obtaining a liquid phase and a gas phase. See paragraph [0055]. The gas phase is then cooled by heat exchangers 16, 18, and 19 to obtain a condensate and a gaseous effluent depleted in hydrogen sulfide and in water, the gaseous effluent being at a temperature between -100 degrees C and 30 degrees C and at a pressure above 1 MPa abs. See paragraphs [0057] and [0058]. It would have

been obvious to one of ordinary skill in the art at the time the invention was made to modified the process disclosed by Cadours et al. to include the method of pretreating acidic natural gas taught by Lecomte et al. because the pretreating method explicitly eliminates water and some of the acidic hydrogen sulfide from the natural gas, which are both undesired impurities.

9. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over 2002/0104438 A1 (Cadours et al.) in view of US 2002/0062735 A1 (Lecomte et al.). as applied to claims 1-5 above, and further in view of US 2002/0059865 A1 (Lemaire et al.). As discussed above, the combination of Cadours et al. and Lecomte et al. demonstrate all the limitations of the claims, except for expressly heating at least one of the liquid effluents so as to obtain a mixed effluent containing a liquid phase and a gas phase prior to distilling the liquid effluent in the distillation column to obtain the regenerated solvent, or that the gas phase from the mixed effluent is fed into the top of the distillation column separately from the liquid phase. Lemaire et al. teach a similar method for treating an acidic gas comprising the steps of heating the effluent from a column C10 in a heat exchanger E1, separating the heated effluent into gas and liquid phases in separating drum B10, and feeding the gas and liquid phases separately into distillation column D1 for the purpose of regenerating solvents in the effluent. See paragraphs [0061] and [0062] and Figure 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the combination of Cadours et al. and Lecomte et al. to have heated the liquid effluent (i.e. the effluent from line 14 of Cadours et al.) to obtain a liquid phase and gas phase prior

to distilling the liquid effluent and to have fed the phases separately to the distillation column as taught by Lemaire et al. because such steps would allow for the different components in the effluent to be pre-separated and increase the effectiveness of the regeneration process. For example, the process of heating and separating the effluent could be implemented on line 17 of Cadours et al. such that heat exchanger E1 of Lemaire et al. is used in place of or in addition to heat exchanger 30, followed by the separating drum B10 and separate paths leading to the regeneration column.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4097250 (Pagani et al.): discloses a method for purifying acidic natural gas comprising the use of a solvent.

US 4710210 (Gazzi et al.): discloses a cryogenic process for the removal of acidic gases from natural gas using solvents.

US 4889700 (Elgue et al.): discloses a process and device for removing hydrogen sulfide from gases using an absorption column followed by regeneration.

US 5735936 (Minkkinen et al.): discloses a process and apparatus for removing an acid gas from natural gas using a solvent.

US 6001153 (Lebas et al.): discloses a method of de-acidification comprising the use of a solvent and regeneration of the solvent.

US 6645272 B2 (Lemaire et al.): discloses a process for deacidizing gas by absorption in a solvent.

US 6666908 B2 (Cadours et al.): discloses a process for deacidizing gas containing hydrogen sulfide.

US 6735979 B2 (Lecomte et al.): discloses a process for pretreating a natural gas containing acid gases.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 571-272-4811. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung
Examiner
Art Unit 3744

CHERYL J. TYLER
PRIMARY EXAMINER

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